

WE CLAIM:

1. A power module for low voltage applications,
comprising:

a power shell;

5 a plurality of lead frames extending through the
power shell;

a plurality of conductive pads disposed in an
interior of the power shell, each one of the plurality
of conductive pads being integral with a respective one
of the plurality of lead frames;

10 at least one power semiconductor device disposed on
each one of the plurality of conductive pads;

15 a thermally conductive but electrically insulating
substrate, the substrate having a first surface in
thermal contact with at least one of the plurality of
conductive pads and a second surface opposing the first
surface for making thermal contact with a heat sink;

a control circuit board having disposed thereon an
electronic control circuit for providing signals to the
power semiconductor devices;

20 at least one terminal providing electrical
connection to the control circuit board, the at least

one terminal being electrically connected to at least one of the power semiconductor devices; and

25 a plurality of wire bonds for electrically inter-
connecting the power semiconductor devices through the
conductive pads to form a circuit.

2. The module of claim 1, wherein the circuit is a three phase inverter circuit.
3. The module of claim 1, wherein the power
30 semiconductor devices are MOSFETs.
4. The module of claim 3, wherein the MOSFETs are rated between thirty and seventy-five volts.
5. The module of claim 1, wherein the control circuit board is mounted atop the power shell.
- 35 6. The module of claim 1, wherein the interior of said power shell is filled with potting material.
7. The module of claim 6, wherein the power shell is a molded plastic.
8. A power module for low voltage applications,
40 comprising:

 a power shell;

a plurality of MOSFETs, each one of the plurality
of MOSFETs having a drain electrode on a surface
thereof, and a source electrode on an opposing surface
45 thereof;

a plurality of lead frames extending through the
power shell;

a plurality of conductive pads disposed in an
interior of the power shell, each one of the plurality
50 of conductive pads being integral with a lead frame, and
electrically connected to a drain electrode of at least
one MOSFET;

a common drain pad integral with a lead frame, and
electrically connected to the drain electrodes of more
55 than one MOSFET to electrically connect the same;

a source pad integral with a lead frame;

a thermally conductive but electrically insulating
substrate, the substrate having a first surface in
60 thermal contact with at least one of the plurality of
conductive pads and a second surface opposing the first
surface for making thermal contact with a heat sink;

a control circuit board having disposed thereon an
electronic control circuit for providing signals to the
65 MOSFETs;

at least one terminal providing electrical connection to the control circuit board, the at least one terminal being electrically connected to at least one of the MOSFETs; and

70 a plurality of wire bonds for electrically inter-connecting the source electrodes of the MOSFETs through the pads to form a circuit.

9. The module of claim 8, wherein the MOSFETs are inter-connected to form a three phase inverter
75 circuit.

10. The module of claim 8, wherein the MOSFETs are rated between thirty and seventy-five volts.

11. The module of claim 8, wherein the control circuit board is mounted atop the power shell.

80 12. The module of claim 8, wherein the interior of said power shell is filled with potting material.

13. The module of claim 8, wherein the power shell is a molded plastic.

14. The module of claim 8, wherein each one of the
85 common drain pad and the source pad is electrically connected to a respective pole of a battery.

15. The module of claim 8, wherein each one of the lead frames that is integral with a conductive pad is an output terminal.